[0047] What is claimed as new and desired to be protected by Letters Patent of the United States is:

1. An optical sensor comprising a pressure sensor co-located with a temperature sensor.

2. The optical sensor of claim 1, wherein said pressure sensor comprises:

a launch fiber having an end positioned within a tube; and

a reflective fiber having a first end positioned an initial distance from the end of said launch fiber, said launch and reflective fibers being bonded to said tube.

3. The optical sensor of claim 2, wherein optical coatings are positioned on said end of said launch fiber and said first end of said reflective fiber.

4. The optical sensor of claim 2, wherein said temperature sensor comprises a second end of said reflective fiber enclosed within a cap formed of a material with a refractive index that changes with a changing temperature.

5. The optical sensor of claim 4, wherein said launch and reflective fibers are bonded into a cavity of said tube.

6. The optical sensor of claim 5, wherein said pressure sensor determines a pressure by measuring an optical displacement between the end of said launch fiber and the first end of said reflective fiber.

7. The optical sensor of claim 6, wherein as pressure is exerted against said tube, the distance between the end of the launch fiber and the first end of the reflective fiber is diminished.

8. The optical sensor of claim 4, wherein said temperature sensor determines a temperature by measuring an optical displacement between the second end of said reflective fiber and a surface of said cap.

9. The optical sensor of claim 1, wherein said pressure sensor comprises:

a launch fiber having an end positioned within a tube; and

a material having a refractive index that changes with changing temperature, said material being positioned within said tube a pre-determined distance from the end of said launch fiber.

10. The optical sensor of claim 9, wherein said temperature sensor comprises:

the material having a refractive index that changes with a changing temperature; and

a disk attached to an end of said tube adjacent the material having a refractive index that changes with changing temperature.

11. A method of forming an optical sensor, comprising the steps of:

filling a cavity of a tube with a material that has a refractive index that changes with a changing temperature;

removing a portion of the material from the cavity;

attaching a silica disk to an end of the tube and adjacent to the material;

inserting an optical fiber in the cavity; and

bonding the optical fiber within the cavity a pre-determined distance from the material.

12. The method of claim 11, wherein the material is silicon and said removing step is accomplished with a chemical etchant.

13. A method of forming an optical sensor, comprising the steps of:

filling a cap with a material that has a refractive index that changes with a changing temperature;

attaching the cap to an end of a tube having a cavity;

inserting an optical fiber in the cavity; and

bonding the optical fiber within the cavity a pre-determined distance from the material.

14. The method of claim 13, further comprising lapping the material in the cap prior to attaching the cap to the tube.

15. The method of claim 13, wherein the material is silicon and said removing step is accomplished with potassium hydroxide.

16. An optical sensor, comprising:

a first pressure sensor co-located with a first temperature sensor; and

a second pressure sensor co-located with a second temperature sensor.

17. The optical sensor of claim 16, wherein said first and second pressure sensors are each located within a cavity of a tube.

18. The optical sensor of claim 17, wherein said first and second pressure sensors each comprises:

a launch fiber having an end positioned within the cavity of said tube; and

a reflective fiber having a first end positioned an initial distance from the end of said launch fiber, said launch and reflective fibers being bonded to said tube.

19. The optical sensor of claim 18, wherein said first and second temperature sensors each comprises a second end of said reflective fiber enclosed within a cap formed of a material with a refractive index that changes with a changing temperature.

20. A method of forming an optical sensor, comprising the steps of:

filling at least two cavities in a tube each with a material that has a refractive index that changes with a changing temperature;

removing a portion of the material from the cavities;

attaching a disk to an end of the tube and adjacent to the material;

inserting an optical fiber in each of the cavities; and

bonding each of the optical fibers within a respective one of the cavities a pre-determined distance from the material.

21. The method of claim 20, wherein the material comprises silicon and said removing is accomplished with potassium hydroxide.